

# New Technology for Smaller, Low-Cost Rotary Position Sensors

NASA offers companies the opportunity to license or jointly develop a novel absolute rotary position sensor with integral signal-conditioning electronics in a single unit.



Researchers at NASA Marshall Space Flight Center have developed a new absolute rotary position sensor that can be used as a conventional resolver or integrated with signal-conditioning electronics in a single unit. Compared to other sensors currently available, NASA's innovative sensor design is smaller and less expensive to produce.

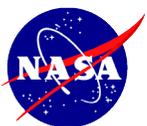
## Benefits

- ▶ Produces conventional resolver signals
- ▶ High-quality sensor information
- ▶ Full 360-degree range
- ▶ Small package size at a low cost
- ▶ Low rotary inertia
- ▶ Multiple output capability possible with internal signal-conditioning electronics
- ▶ Continuous, absolute output without discrete jumps like with encoders
- ▶ Electrical redundancy achieved with minimal volume or cost impact

## Commercial Applications

This technology can be used in any rotational measurement application:

- ▶ Printers, photocopiers, fax machines
- ▶ Electric motors
- ▶ Robotics
- ▶ Medical scanners
- ▶ Antilock brake systems
- ▶ Industrial manufacturing equipment





### The Technology

NASA Marshall Space Flight Center developed this technology in effort to reduce the size of microgravity vibration isolation systems. The technology can be configured as a rotary position sensor, similar to conventional resolvers, but it uses a different concept for sensing rotary position. The sensor unit also can incorporate signal conditioning electronics into the housing body to develop the desired output (e.g., analog output of rotary position, absolute encoder outputs, incremental encoder outputs with or without index, RS485 buffered outputs).

NASA's sensor technology has several advantages over conventional means of sensing rotary position. The sensor measures absolute position over the full 360 degrees of rotation and can be miniaturized to fit into various applications. The design can be configured in slip-ring or brushless versions and can easily provide electrically redundant signals. The technology is immune to permanent and alternating magnetic fields, which aids in accuracy. In addition, unlike comparable resolvers, NASA's technology is made with low-cost components and high-volume manufacturing techniques.

### Partnering Opportunities

This technology is part of NASA's technology transfer program. The program seeks to stimulate commercial use of NASA-developed technologies. A patent application has been filed for this technology, and development and testing are continuing.

NASA invites commercial companies to consider licensing or jointly developing this technology. NASA is flexible in its agreements, and opportunities exist for exclusive, nonexclusive, and exclusive field-of-use licensing.

### For More Information

If you would like more information about this technology or about NASA's technology transfer program, please contact:

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More information about working with NASA Marshall's Technology Transfer Department is available online.

[www.nasasolutions.com](http://www.nasasolutions.com)